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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
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NGUYEN, DUC MINH

ART UNIT	PAPER NUMBER
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2643

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/693,652

Applicant(s)

HEIN ET AL.

Examiner

Duc Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17 and 18 is/are allowed.
- 6) ☒ Claim(s) 1-16, 19-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6, 19-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Rosenbaum et al (5,323,461).

Consider claim 1. Rosenbaum teaches a method comprising providing subscriber loop pull-down circuitry (10-11) operating in a first voltage domain (a plurality voltage levels associated with the on-hook state, tables 1-2), wherein the subscriber loop pull-down circuit decreases at least one of a tip and a ring line current (approx. < 13mA) in response to a corresponding pull-down control signal (control signals 17-18); and providing control circuitry operating in a second voltage domain (a plurality voltage levels associated with the off-hook state, tables 1-2) wherein the first and second voltage domains are substantially distinct (off-hook current > 13mA, on-hook current < 13mA; col. 5, ln. 29-47; tables 1-2), wherein the control circuitry (control circuit 15; col. 2, ln. 5-68) varies the pull-down control signal in response to a sensed current (sensing circuit 12) corresponding to an associated one of a tip-pull down current and a ring pull-down current (col. 5, ln. 22 to col. 6, ln. 68; col. 8, ln. 39-65).

Consider claims 2-3. Rosenbaum further teaches a pull-up circuitry (10-11; mode 2, col. 5, ln. 29-47), wherein the pull-up circuitry increases the at least one of the tip and ring currents

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(to 20-50mA) in response to a corresponding pull-up control signal provided by the control circuitry (control signals 17-18).

Consider claim 4. The feedback isolation stage is met by the (line 16 and col. 3, ln. 51-63).

Consider claim 5. The control isolation stage is met by the controlled voltage generator (14).

Consider claim 6. Rosenbaum teaches a method comprising providing subscriber loop pull-down circuitry (10-11) operating in a first voltage domain (a plurality voltage levels associated with the on-hook, tables 1-2), wherein the subscriber loop pull-down circuit decreases at least one of a tip and a ring line current (approx.  $< 13\text{mA}$ ) in response to a corresponding pull-down control signal (control signals 17-18); and providing control circuitry operating in a second voltage domain (a plurality voltage levels associated with the off-hook, tables 1-2) wherein the first and second voltage domains are substantially distinct (off-hook current  $> 13\text{mA}$ , on-hook current  $< 13\text{mA}$ ; col. 5, ln. 29-47, tables 1-2), wherein the control circuitry (control circuit 15; col. 2, ln. 5-68) varies the pull-down control signal in response to a sensed current (sensing circuit 12) corresponding to an associated one of a tip-pull down current and a ring pull-down current (col. 5, ln. 22 to col. 6, ln. 68; col. 8, ln. 39-65). Rosenbaum further teaches a control isolation stage (control voltage generator 14) coupled to provide the pull-down control signal (18) from the control circuitry (15) to the pull-down circuitry (10); a feedback isolation stage (sensing current 12 and feedback path 16).

Consider claim 19. Rosenbaum teaches a subscriber line interface circuit comprising a linefeed driver (10) responsive to pull-up and pull-down control signals (18; col. 8, ln. 1-6) to

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vary at least a selected one of a tip and ring current of a subscriber loop (col. 5, ln. 22 to col. 6, ln. 68; col. 8, ln. 39-65); and a signal processor (15) sensing a pull-down current (loop current; col. 7, ln. 63-65) of the selected one of the tip and ring lines into a battery feed mode, the signal processor generating pull-down control signals (17-18) for the selected current in response to the sensed pull-down current, wherein the linefeed driver does not reside within a same integrated circuit package as the signal processor (fig. 1).

Consider claim 20. Col. 3, ln. 51-63 reads on the limitations of claim 20.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 7-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosenbaum et al (5,323,461) in view of Embree et al (4,473,719).

Consider claim 7. Rosenbaum does not disclose the detail circuit of the pull-down circuitry.

Fig. 4 of Embree shows a pull-down transistor (111) coupled to the subscriber line (R) and a battery feed node (-48V) through a sense impedance (RS).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Embree into the teachings of Rosenbaum in order

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to prevent false hook status indications caused by large longitudinal currents which may be induced in the communication pair.

Consider claims 8-15. The current sensor illustrated in fig. 2 of Embree reads on the limitations of claims 8-15.

Consider claim 16. Rosenbaum in view of Embree does not explicitly teach the use of a FET; however, it was well known to one skilled in the art to use FETs, MOSFETs in place of bipolar junction transistor in order to achieve faster switching, and lower power consumption.

#### ***Allowable Subject Matter***

5. Claims 17-18 are allowed over the prior art of record.

#### ***Response to Arguments***

6. Applicant's arguments filed 3/8/24 have been fully considered but they are not persuasive.

Regarding the Rosenbaum reference, applicant states "Rosenbaum does not teach or suggest pull-down circuitry operating in a first voltage domain, and control circuitry operating in a second voltage domain, wherein the first and second voltage domains are substantially distinct." In contrast to applicant's assertions, the control circuit operates in a first voltage domain (e.g., line powered or C.O. battery feed, tables 1-2) and the line drive operates in a second voltage domain (e.g., either by the C.O. battery feed or voltages provided by the CVG 14, tables 1-2). In case the line drive operating using the voltages provided by the CVG 14, the control circuit and the line driver circuitry operate in different voltage domains. Applicant

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further argues that the examiner is referring to current domains rather than voltage domains. In contrast to applicant's assertions, col. 2, ln. 5-58; col. 3, ln. 51 to col. 4, ln. 34 all disclose voltage domains. Furthermore,  $V=IR$ . Therefore, there is always a relationship between V and I.

Regarding claims 1 and 6, the examiner has cleared up the issues regarding the control signal and the on-hook and off-hook voltage levels (see the above rejections).

Regarding the Rosenbaum reference, applicant further states "Rosenbaum is silent on the issue of integrated circuits." In contrast to applicant's assertions, col. 7, ln. 63 to col. 8, ln. 12 imply that the control circuit 15 is a processor in the form of integrated circuit (e.g., one package contains a digital-to-analog converter and digital control circuit or state machine).

#### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Duc Nguyen whose telephone number is 703-308-7527. The examiner can normally be reached on 6:00AM-2:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis Kuntz can be reached on 703-305-4708. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Duc Nguyen  
Primary Examiner  
Art Unit 2643

4/26/04